

REMARKS

The present application includes pending claims 1-29, all of which have been rejected. The Applicant submits that the pending claims define patentable subject matter.

Claims 1-2, 4, 7-9, 19-20 and 23-24 stand rejected under 35 U.S.C. § 102(b) as being anticipated by United States Patent No. 5,305,363 ("Burke"). Claims 1, 3-5, 7, and 9 stand rejected under 35 U.S.C. § 102(a) as being anticipated by WIPO Patent No. WO 03/002002 A1 ("Okamura"). Claims 11-15 and 18 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Reissued United States Patent No. Re. 35,035 ("Anderton"). Claims 11-12, 15-16, and 18 stand rejected under 35 U.S.C. § 102(b) as being anticipated by United States Patent No. 5,226,064 ("Yahata"). Claims 1-4, 6-7, and 25-26 stand rejected under 35 U.S.C. § 102(b) as being anticipated by United States Patent No. 6,669,366 B2 ("Busse").

Claim 10 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Okamura in view of Innovative Technology Summary Report (ITSR), Portable X-ray, K-Edge Heavy Metal Detector. Claim 17 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Yahata in view of Innovative Technology Summary Report (ITSR), Portable X-ray, K-Edge Heavy Metal Detector. Claim 21 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Burke in view of Busse. Claim 22 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Burke in view of Innovative Technology Summary Report (ITSR), Portable X-ray, K-Edge Heavy Metal Detector. Claims 25 and 27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Burke in view of Okamura and Anderton. Claim 28 stands rejected under 35 U.S.C. §

103(a) as being unpatentable over Busse in view of Okamura. Claim 29 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Busse in view of Burke.

The Applicant respectfully traverses these rejections at least for the reasons previously set forth during prosecution and the following:

I. Burke Does Not Anticipate Claims 1-2, 4, 7-9, 19-20, And 23-24

The Applicant first turns to the rejection of claims 1-2, 4, 7-9, 19-20, and 23-24 as being anticipated by Burke. “A claim is anticipated only if **each and every element** as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *See* MPEP at § 2131 (internal citation omitted). Further, “[t]he identical invention must be shown in as complete detail as it is contained... in the claim.” *See id.* (internal citation omitted). As discussed below, Burke does not expressly or inherently describe “every element as set forth” in the claims of the present application.

A. Burke Does Not Describe An Auxiliary Module Removably Connected To Said Imaging Device Having A Cooling Unit Configured To Cool Liquid To A Chilled State And Circulate The Chilled Liquid That Is Cooled By The Cooling Unit Itself

Burke describes a scanning system that circulates cooling fluid through a heat exchanger to keep a target anode cool.

The housing and the anode define an annular cooling fluid path or channel 12 in intimate thermal communication with the anode face, specifically along an opposite surface of the anode. The anode can be a large continuous member or assembled form (sic) multiple sections. Optionally, the anode can have internal passages, fins, and the like to promote thermal communication with the cooling fluid. A fluid circulating means 14 circulates the fluid through the stationary anode and housing to a heat exchanger 16 to keep the target anode cool.

See Burke at column 5, lines 1-11.

While the system utilizes a “cooling fluid,” Burke does not describe a cooling unit to cool the fluid to a chilled state. Instead, Burke describes only a fluid by itself that is not cooled by any cooling device. Thus, Burke does not, expressly or inherently, describe a **cooling unit** configured to cool liquid to a **chilled state** and circulate **the chilled liquid** to and from the imaging element.

Claim 1, for example, recites a cooling unit that cools liquid to “a chilled state” and circulates the “chilled liquid.” While Burke describes a heat exchanger that circulates fluid to cool an anode, it does not describe a unit that cools the temperature of the fluid being circulated to a point in which it is considered “chilled.” The Office Action states that “to chill” is defined as “to lower in temperature; cool.” *See* June 5, 2006, Office Action at page 16. But, the relevant claims do not recite the verb “to chill.” They recite the adjective “chilled.” *See* Claims 1 and 19. The adjective, “chilled,” is defined as “chilly,” which is further defined as “cold enough to cause shivering” and “seized with cold.” *See* Webster’s II New College Dictionary (2001) (copy at relevant page attached as Tab A to January 10, 2006 Amendment). Claims 1 and 19 were previously amended to emphasize this latter use of the term “chilled”. *See* January 10, 2006 Amendment at pages 2 and 5.

The current Office Action maintains that “chilled” is being used as a verb and therefore means “To lower in temperature; cool.” The term “chilled,” however, appears in the specification several times, always an adjective, and therefore means “cold enough to cause shivering” and/or “seized with cold.” *See* Specification at ¶¶ 6, 7, 10, 11, 23, 24, 34. Further, “[t]he claims of a patent are always to be read or interpreted in light of its specification.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005) (citing with

approval *Schriber-Schroth Co. v. Cleveland Trust Co.*, 311 U.S. 211, 217, 85 L. Ed. 132, 61 S. Ct. 235, 1941 Dec. Comm'r Pat. 802 (1940)).

Also, Burke does not describe a module that both cools and circulates cooling fluid. Burke describes a circulating means that is separate and distinct from a heat exchanger, neither of which is part of an individual module as described in claims 1 and 19. *See* Burke Fig.1 items 14 and 16.

Further, Burke does not disclose that the circulating means, or the heat exchanger, is removably connected to the imaging system as described in claims 1 and 19. The previous December 21, 2005, Office Action stated that the circulating means and the heat exchanger components in Burke are “considered to be removably connected since the two fluid transfer tubes and one cable can be cut... .” *See* December 21, 2005, Office Action at page 19. Applicant responded by arguing that “[r]emovably connected, however, does not mean severable by cutting. Removably connected means capable of being disconnected and subsequently reconnected.” *See* January 10, 2006 Amendment at 10. The current Office Action now states that removably connected means “removable by any means.” June 5, 2006 Office Action 16. Such an interpretation would effectively read out the entire limitation of “removably connected.” Additionally, such an interpretation would be inconsistent with the specification:

For example, the cooling duct may be configured to be positioned over the imaging element during periods of imaging; but, when the imaging device is not in operation, the cooling duct may be removed from the imaging element and stored with the auxiliary module.

Specification at ¶ 8.

The fluid outlets 48, 56 and the fluid inlets 44 and 54 include structures, such as check valves, to ensure that fluid does not escape when the cooling unit 32 is not in operation and/or when the tubes 46 and 58 are not connected thereto.

Specification at ¶ 24.

Thus, at least for these reasons, the Applicant respectfully submits that Burke does not anticipate claims 1-2, 4, and 19 of the present application, nor claims 7-9, 20, and 23-24, which depend from claims 1 and 19.

B. Burke Does Not Describe An Auxiliary Module Comprising Both A Cooling Unit And A Booster Battery Pack

The Applicant now turns to claim 19. Though Burke describes a heat exchanger for circulating fluid, as well as an energy storage device, Burke does not expressly or inherently describe an auxiliary module comprising devices that perform both functions, nor does it describe a module that is removably connected as described by claim 19 as amended. The Office Action's citations to Burke reference two separate and distinct figures as anticipating claim 19.

...Burke et al. teaches **an auxiliary module (See Fig. 1 item III) comprising a cooling unit** configured to circulate chilled liquid to and from the imaging element, wherein the chilled liquid absorbs heat produced by the imaging element (See Fig. 1 item 14 and 16, Fig. 2 item 10 and 12, Col. 5 lines 1-11); **and a booster battery pack**, wherein said booster battery pack is configured to be electrically connected to the medical imaging system in order to provide additional power to the medical imaging system. (See Fig. 1 item III, Fig. 2 item 93 ad Col. 6 line 66- Col. 7 line 4)...

See June 5, 2006 Office Action at pages 3-4. Fig. 1 of Burke shows a CTR scanner system while Fig. 2 shows the x-ray source and detector. The components cited in the Office Action, however, do not expressly or inherently describe a **single auxiliary**

module comprising **both** a cooling unit **and** a booster battery pack. At least for these reasons, the Applicant respectfully submits that Burke does not anticipate claims 19, 20 and 23-24.

II. Okamura Does Not Anticipate Claims 1-5, 7, And 9

The Applicant now turns to the rejection of claims 1-5, 7, and 9 as being anticipated by Okamura. The Examiner cites Okamura as anticipating claims 1-5, 7 and 9 of the present application and provides U.S. Patent Application Publication document US2004/0234040 A1 (“Okamura Publication”) as an English language translation of the WIPO document cited.

A. Okamura Does Not Describe An Auxiliary Module Removably Connected To A Medical Imaging Device That Both Cools Liquid To A Chilled State And Circulates The Chilled Liquid

According to the Okamura Publication, Okamura discloses an X-ray tube device that is cooled by a system that uses insulating oil circulating within the interior of the X-ray tube device, a heat exchanger, an oil pump, cooling tubes, and an additional cooling device that includes a water pump, a water tank, a refrigerator and an evaporator.

The X-ray tube device 1 is cooled by the insulating oil 3 circulating in the interior of the X-ray tube device 1. The insulating oil 3 is circulated by an **oil pump 2** between the interior of the X-ray tube device 1 and a **heat exchanger 4** for the X-ray tube device. The heat of the insulating oil 3 is exchanged with the heat of the cooling water 5 in the heat exchanger 4.

The X-ray detector 14 is accommodated in, for example, a glass casing 15, and a cooling tube 16, through which the cooling water 5 flows, is disposed on the upper surface of the glass casing 15. The **cooling device 13** is provided with a cooling **water tank 7** in which the cooling water 5 is stored, and the cooling water 5 in the cooling water tank 7 is suctioned by a cooling **water pump 6** and introduced into a **cooling tube 16** through a flexible resin cooling

water tube 18. The cooling water 5, which has passed through the **cooling tube 18**, and the cooling water 5, which has passed through the heat exchanger 4, is returned into the cooling water tank 7 through the cooling water tube 18. In the cooling water tank 7, a liquefied refrigerant supplied from a **refrigerator 9** is evaporated by an **evaporator 8**, thereby the cooling water 5 is cooled.

See Okamura Publication Paragraph [0022], line 9 – Paragraph [0023], line 17.

Okamura, however, does not expressly or inherently, describe an auxiliary module that is **removably** connected (*i.e.*, capable of being disconnected and subsequently reconnected) to an imaging device as recited in claim 1. Further, Okamura does not expressly or inherently describe a module that by itself is able to “to cool liquid to a chilled state and circulate the chilled liquid to and from said imaging element, wherein the chilled liquid absorbs heat produced by said imaging element,” as recited in claim 1. At least for these reasons, the Applicant respectfully submits that Okamura does not anticipate claims 1-5, 7, and 9.

B. Okamura Does Not Disclose A Cooling Duct That Is Removably Connected To Said Imaging Element

With respect to claim 5, Okamura discloses cooling tubes that circulate cooling water in order to cool an X-ray detector. However, Okamura does not, either expressly or inherently, describe cooling ducts that are removably **connected** to an imaging element as described in claim 5 of the present application. The previous December 21, 2005, Office Action stated:

The X-ray detector 14 is accommodated in, for example, a glass casing 15, and a cooling tube 16, through which the cooling water 5 flows, is disposed on the upper surface of the glass casing 15. This does not require it to be permanently affixed to the plate but merely be disposed on (be put in place).

See December 21, 2005, Office Action at page 22. The previous Office Action's logic appeared to be that because Okamura does not describe permanent affixation (*i.e.*, a non-removable connection), then it must describe a temporary affixation (*i.e.*, a removable connection). In actuality, however, Okamura does not describe, either expressly or inherently, a connection of any kind. It simply describes a contacting. Although the current Office Action "notes that the cooling tube (16) [of Okamura] is thermally connected to the x-ray detector" (*see* June 5, 2006, Office Action at 17), **there is no connection of any kind. There is only a contacting.** See Okamura Figures 3-5, parts 14 and 16. At least for this reason, the Applicant respectfully submits that Okamura does not anticipate claim 5 of the present application.

III. Anderton Does Not Anticipate Claims 11-15 and 18

The Applicant next turns to the rejection of claims 11-15 and 18, as being anticipated by Anderton.

A. Anderton Does Not Describe An Auxiliary Module That Is Separate, Distinct, And Removably Connected Directly To A Medical Imaging Device

Anderton does not expressly or inherently disclose an auxiliary module that is separate, distinct, and removably connected (*i.e.*, capable of being disconnected and subsequently reconnected) **directly** to a medical imaging device, as recited in claims 11-15. The batteries cited in Anderton (Fig 2. item 49) are a part of the medical imaging device (*i.e.*, the C-Arm X-Ray Unit) itself and are, thus, not a part of an auxiliary module that is separate, distinct and removably connected to the medical imaging device. The issue is not whether the batteries cited in Anderton are in "electrical connection" as stated by the Office Action but whether Anderton discloses an auxiliary module that is

“separate, distinct, and removably connected directly to said medical imaging device” as recited in claim 11. Claim 11 refers to the term “connected” twice and the Office Action has blurred the distinction between the two uses of the term. Claim 11 recites, in part:

an auxiliary module having a booster battery pack, wherein said **booster battery pack is configured to be electrically connected** to the medical imaging device in order to provide additional power to the medical imaging device, wherein said **auxiliary module is separate, distinct, and removably connected directly to said medical imaging device.**

It is the latter use of the term connected that Anderton clearly does not disclose. The fact that the batteries in Anderton may be in “electrical connection” is insufficient. For at least these reasons, the Applicant respectfully submits that Anderton does not anticipate claims 11-15 and 18 of the present application.

B. Anderton Does Not Disclose An Auxiliary Module That Is Permanently Affixed To One Of A Floor Or A Wall

With respect to claim 15, the Examiner notes: “A floor or wall is not part of the medical imaging device.” The floor or wall, however, need not be part of the medical imaging device. The auxiliary module can be “permanently affixed to one of a floor and a wall” as recited in dependent claim 15 while also being “separate, distinct and removably connected to said medical imaging device” as recited in independent claim 11. Thus, claim 15 does further limit “[t]he medical imaging system of claim 11.” *See* Claim 15. At least for this additional reason, the Applicant respectfully submits that Anderton does not anticipate claim 15 of the present application.

IV. Yahata Does Not Anticipate Claims 11-12, 15-16, and 18

The Applicant next turns to the rejection of claims 11-12, 15-16, and 18 as being anticipated by Yahata.

A. Yahata Does Not Disclose An Auxiliary Module Having A Booster Battery Pack... Wherein Said Auxiliary Module Is Separate, Distinct, And Removably Connected Directly To Said Medical Imaging Device

Yahata discloses a secondary power supply source capable of supplying peak power during a scanning operation.

When the scanning operation is carried out, the DC output derived from the rectifier circuit 2 is superimposed with the DC power supplied from the secondary battery unit 5 and then supplied to the high power consumption unit.

See Yahata at column 4, lines 58 – 62.

Yahata does not, however, either expressly or inherently describe “an auxiliary module having a booster battery pack... wherein said auxiliary module is **separate, distinct, and removably connected** (*i.e.*, capable of being disconnected and subsequently reconnected) directly to said medical imaging device” as described in claim 11 of the present application. Instead, Yahata describes a secondary battery unit that is electrically connected in circuit with a commercial power supply source, and a high power consumption unit, (e.g. an X-ray tube drive unit) such that the battery source is receiving a charge from the commercial supply source when not supplying power to the high power consumption unit.

[T]he **secondary battery unit 5A** is employed as the major power supply source to a high voltage transformer 11 via a chopper circuit 12 and a DC/AC inverter 13. As a result, the high DC power may be supplied from the secondary battery unit 5A during the scanning operation, and **this secondary battery unit 5A is charged from the single-phase commercial power source 1** during the non-scanning operation. Also, an X-ray tube 9 may be

sufficiently driven by this battery unit 5A during the scanning operation.

Id. at column 5, line 67 – column 6, line 9; *see also id.* at Fig 1, items 1, 3, 5, 100 and column 2, line 63 – column 3, line 27.

Yahata describes a battery unit connected with both the imaging device and the commercial power supply source. Yahata does not, however, expressly or inherently describe an auxiliary module having a battery booster pack that is “separate, distinct, and removably connected directly to said medical imaging device,” as recited in claim 11. At least for these reasons, the Applicant respectfully submits that Yahata does not anticipate claims 11-12, 15-16, and 18 of the present application.

B. Yahata Does Not Disclose An Auxiliary Module That Is Permanently Affixed To One Of A Floor Or A Wall

With respect to claim 15, the Examiner notes: “A floor or wall is not part of the medical imaging device.” The floor or wall, however, need not be part of the medical imaging device. The auxiliary module can be “permanently affixed to one of a floor and a wall” as recited in dependent claim 15 while also being “separate, distinct and removably connected to said medical imaging device” as recited in independent claim 11. Thus, claim 15 does further limit “[t]he medical imaging **system** of claim 11.” *See* Claim 15. At least for this additional reason, the Applicant respectfully submits that Yahata does not anticipate claim 15 of the present application.

V. Busse Does Not Anticipate Claims 1-4, 6-7, 25-26

The Applicant next turns to the rejection of claims 1-4, 6-7, 25-26 as being anticipated by Busse. Busse discloses a system that applies a cooling medium from a heat exchanger to an X-ray detector and an X-ray source. *See* Busse column 3 lines 4-19.

Busse discloses the following:

The heat exchanger is preferably arranged outside the supporting device; however, a compact heat exchanger can also be integrated in the C arm or be arranged on the C arm when the construction of the overall system is to be smaller.

Id. column 2, line 66 – column 3, line 3.

Busse, however, does not describe a cooling unit that is part of “an auxiliary module removably connected (*i.e.*, capable of being disconnected and subsequently reconnected) to (the) imaging device” as recited in claim 1. Nor does Busse disclose a method of cooling an x-ray tube involving an auxiliary module that is connected “in a removable fashion to the mobile x-ray device” as recited in claim 25.

In rejecting claim 6, the first Office Action stated that the auxiliary module of Busse is a part of the entire system. *See* August 5, 2005 Office Action at page 10 (“...entire system is mobile which includes auxiliary module”). Further, in rejecting claim 7, the first Office Action stated that the cooling unit is an integral part of the medical imaging system. *See id.* (“Busse et al. describes the cooling unit as an integral part of the medical imaging system.”) In response, the Applicant pointed out that the first Office Action appeared to concede that the module containing the cooling unit is not taught to be **removably** connected from the imaging system. *See* October 13, 2005 Amendment at page 20.

The current Office Action, however, summarily states that “[t]he module (in Busse) is removable by any means.” *See* June 5, 2006 Office Action at page 8. There is, however, no support in Busse for the Office Action’s assertion, nor for an assertion that the module is “removably connected” or connected “in a removable fashion” (*i.e.*,

capable of being disconnected and subsequently reconnected) as recited in claims 1 and 25. For at least these reasons, the Applicant respectfully submits that Busse does not anticipate claims 1-4, 6-7, or 25-26.

VI. Claim Rejections Under 35 USC § 103

The Applicant respectfully submits that independent claim 25 and dependent claims 10, 17, 21, 22, and 27-29, which depend from claims 1, 11, 19, 20, and 25, respectively, are in condition for allowance at least for the reasons discussed above.

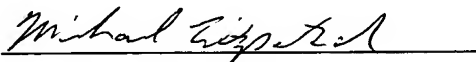
VII. Conclusion

The Applicant respectfully submits that the pending claims of the present application should be in condition for allowance at least for the reasons discussed above and request reconsideration of the claim rejections. If the Examiner has any questions or the Applicant can be of any assistance, the Examiner is invited to contact the undersigned attorney for the Applicant. The Commissioner is authorized to charge any necessary fees or credit any overpayment to the Deposit Account of McAndrews, Held & Malloy, Account No. 13-0017.

Respectfully submitted,

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